

Appl. No. 10/002,429
Amdt. Dated 04/22/2004
Reply to Office Action of March 3, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method for forming multiple resistors on a substrate, comprising:
first providing a first resistor;
first depositing, patterning, and selectively etching a first dielectric layer over the first resistor;
second providing second resistor material over the first dielectric layer;
third providing landing pad material over the second resistor material; and
selectively etching said landing pad material and said second resistor material, where said selectively etching forms contacts for the first resistor in a first region, and forms a second resistor and associated contacts in a second region.
2. (Original) The method of claim 1, wherein said first providing includes providing chromium silicon (CrSi) material.
3. (Original) The method of claim 1, wherein said first providing includes providing nickel chromium (NiCr) material.
4. (Original) The method of claim 1, wherein said first providing includes providing a silicon substrate.
5. (Original) The method of claim 1, wherein said second providing includes providing nickel chromium (NiCr) material.
6. (Original) The method of claim 1, wherein said third providing said landing pad material includes providing titanium-nitride (TiN).

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7. (Original) The method of claim 1, wherein said third providing said landing pad material includes providing titanium-tungsten (TiW).

8. (Original) The method of claim 1, wherein said first providing a first resistor includes providing a substrate.

9. (Original) The method of claim 8, wherein said first providing a first resistor includes depositing a second dielectric layer on top of the substrate.

10. (Original) The method of claim 9, wherein said first providing a first resistor includes depositing, patterning, and selectively etching a first resistor material on top of the second dielectric layer.

11. (Original) The method of claim 1, further comprising:
second depositing a second dielectric layer on said contacts for the first resistor, exposed portions of said second resistor, and exposed portions of said first dielectric layer.

12. (Original) The method of claim 11, further comprising:
appropriately repeating said first providing, said first depositing, said second providing, said third providing, said selectively etching, and said second depositing.

13. (Currently Amended) A method for forming a plurality of thin film resistors, comprising:

forming a first thin film resistor;

depositing and selectively etching a dielectric layer to provide contact openings in the dielectric layer for the first thin film resistor;

depositing a layer of second thin film resistor material;

depositing a layer of landing pad material;

patterning and selectively etching the landing pad material on a and the layer of second thin film resistor material in the contact openings to provide contacts to the first thin film resistor in the contact openings[[;]]

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~~first selectively etching the landing pad material and at an area away from the contact openings~~ to form a second thin film resistor in an area away from the contact openings; and
second selectively etching the landing pad material above the second thin film resistor to expose the second thin film resistor, and to provide contacts for the second thin film resistor.

14. (Original) The method of claim 13, further comprising:
appropriately repeating said forming, said depositing, said patterning, said first selectively etching, and said second selectively etching, to form additional thin film resistors.

15. (Original) A method for forming a plurality of thin film resistors, comprising:
first providing a substrate;
first depositing a first dielectric layer on the substrate;
second depositing a first thin film resistor material on the first dielectric layer;
first patterning and selectively etching the thin film resistor material to form a first thin film resistor;
third depositing a second dielectric layer over the first thin film resistor and over the exposed portion of the first dielectric layer;
etching the second dielectric layer over portions of the first thin film resistor to provide contact openings for the first thin film resistor;
fourth depositing second thin film resistor material over portions of the first thin film resistor underlying the contact openings and over the second dielectric layer;
fifth depositing landing pad material over the second thin film resistor material;
second patterning and selectively etching the landing pad material and the second thin film resistor material over the contact openings to provide etch-stop contacts for the first thin film resistor;
third patterning and selectively etching the landing pad material and the second thin film resistor material at an area away from the first thin film resistor to form a second thin film resistor;

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selectively etching the landing pad material on the second thin film resistor to expose the second thin film resistor, and to provide contacts to the second thin film resistor with remaining portions of the landing pad material;

sixth depositing a third dielectric layer over the etched landing pad material, exposed portion of the second thin film resistor, and exposed portion of the second dielectric layer; and second providing shallow contacts to the first and second thin film resistor.

16. (Original) The method of claim 15, wherein said providing a substrate includes providing a silicon substrate.

Claims 17-20 (Canceled)